

REMARKS**Summary of the Office Action**

Claim 2 stands rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite. Claims 5-8 are objected to for certain informalities. Claims 1 and 4 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,488,262 to *Takamura*. Claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Japanese Patent No. JP 402242577A to *Kagawa*. Claims 3, 5-8, 9, and 10 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over *Takamura* or *Kagawa* and "*common knowledge in the art.*"

Summary of the Response to the Office Action

Applicants resubmit herewith the Information Disclosure Statement and PTO-1449 filed February 12, 2002 with dates added to the PTO-1449. Applicants request that the Examiner indicate consideration of the foreign references by initialing the enclosed PTO-1449.

Applicants amend the specification to be consistent with the drawing amendments. No new matter has been amended.

Applicants cancel claim 9 without prejudice or disclaimer and amend claims 1, 2 and 5-8. Accordingly, claims 1-8 and 10 are pending for further consideration.

Drawings

Applicants concurrently file a Request for Approval of Drawing Changes to amend Fig. 2 to change reference numeral 3 to reference numeral 4, and reference numeral 4 to reference numeral 5, to be consistent with the description of Fig. 2 in the specification. No new matter has been added. Applicant respectfully requests that the Examiner approve the drawing changes. A Submission of Formal Drawings is also concurrently filed to effect such changes.

All Claims are Allowable

Claim 2 was rejected under 35 U.S.C. § 112, second paragraph, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claim 2 has been amended to remove certain features and re-organize the claim. It is respectfully submitted that claim 2 is in compliance with 35 U.S.C. § 112, second paragraph. Accordingly, it is respectfully requested that the rejections under 35 U.S.C. § 112, second paragraph, be withdrawn.

All Subject Matter Complies With 35 U.S.C. § 102(b)

Claims 1 and 4 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,488,262 to *Takamura* and claim 1 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Japanese Patent No. JP 402242577A to *Kagawa*. These rejections are respectfully traversed for at least the following reasons.

Applicants respectfully submit that neither *Takamura* nor *Kagawa* disclose, teach, or suggest at least the feature of a laser weld to join the body and the first tip as recited in independent claim 1.

Takamura discloses a spark electrode that includes a stress relieving layer 41 of composite tip 43 that is resistance welded to earth electrode 30. (See *Takamura* specification column 4 lines 1-10). *Kagawa* discloses a typical spark plug for internal combustion engine that includes a stress relaxation layer 7. However, neither *Takamura* nor *Kagawa* disclose or teach a spark plug that includes at least the feature of a laser weld to join the body and the first tip as recited in independent claim 1. Accordingly, it is respectfully submitted that the rejections under 35 U.S.C. § 102(b) are in error because neither reference discloses each and every feature of Applicants' claimed invention. Withdrawal of the rejection is respectfully requested.

All Subject Matter Complies With 35 U.S.C. § 103(a)

Claims 3, 5-8 and 9-10 were rejected under 35 U.S.C. § 103(a) as being unpatentable over *Takamura* or *Kagawa* and *common knowledge in the art*. These rejections are respectfully traversed for at least the following reasons.

To establish a *prima facie* case of obviousness, three basic criteria must be met (see MPEP §§ 2142-2143). First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine reference teachings. Second, there must be a reasonable expectation of success. Third, the prior art references must teach or suggest all the claim limitations.

In the present case, neither *Takamura* nor *Kagawa* nor *common knowledge in the art*, either alone or in combination teach or suggest at least the features of a “basic body and the first tip joined by a laser weld.” Thus, the Office Action fails to establish a *prima facie* case of obviousness because it does not teach all the recited claim features. Therefore, Applicants respectfully request that the rejection of claims 3, 5-8 and 10 under 35 U.S.C. § 103 be withdrawn.

CONCLUSION

In view of the foregoing, Applicants respectfully request reconsideration and the timely allowance of the pending claims. Should the Examiner feel that there are any issues outstanding after consideration of the response, the Examiner is invited to contact the Applicants' undersigned representative to expedite prosecution.

If there are any other fees due in connection with the filing of this response, please charge the fees to our Deposit Account No. 50-0310. If a fee is required for an extension of time under

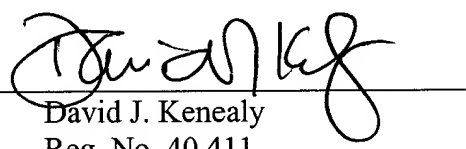
37 C.F.R. §1.136 not accounted for above, such an extension is requested and the fee should also be charged to our Deposit Account.

Attached hereto is a marked-up version of the changes made to the specification and/or claims by the current amendment. The attached page is captioned "**Version with markings to show changes made.**"

Respectfully submitted,

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Version With Markings to Show Changes Made

IN THE SPECIFICATION:

The paragraph beginning at page 23, lines 3-17 has been rewritten as follows:

FIG. 2 is an enlarged longitudinal sectional view showing the neighborhood of the center electrode and the ground electrode of the spark plug in which an interlayer is disposed between the tip of the ground electrode and the base. The center electrode 1 is made up of a basic body 11 and a tip 12 for the center electrode, and the ground electrode 2 is made up of a base 21, an interlayer 22, and a tip 23 for the ground electrode. The ground electrode 2 is connected to a part of the end surface of the main metal fitting [4] 5, and the other end thereof is disposed to face the center electrode 1. The tip 12 for the center electrode is joined to the basic body 11 by a junction 13 formed according to laser welding. Excepting the fact that an interlayer is not formed, the spark plug of Comparative example 1 is constructed in the same way as in Embodiment 1.

IN THE CLAIMS:

Claims 1, 2 and 5-8 have been amended as follows:

1. (Twice Amended) A spark plug for an internal combustion engine comprising:
a center electrode including a basic body and a first tip joined to said basic body; and
a ground electrode including a base having an interlayer formed at a predetermined position of said base, and a second tip joined to a surface of said interlayer,
wherein said first tip and said second tip are disposed to face each other, said first tip and said second tip are each made of Ir or made of an Ir alloy,

wherein a thermal expansion coefficient of said interlayer is between a thermal expansion coefficient of said base and a thermal expansion coefficient of said second tip, and the basic body and the first tip are joined by a laser weld.

2. (Twice Amended) The spark plug for an internal combustion according to ~~{C}~~claim 1, wherein said first tip and said second tip are each made of an Ir alloy that contains ~~{(1)}~~ Rh of 1.5 to 50 weight % ~~{(2)}~~ and Pt of 1 to 10 weight %, or Rh of 1.5 to 50 weight % and ~~{Pt or}~~ Ru of 1 to 10 weight %, and said interlayer is made of an Ir or Pt alloy.

5. (Twice Amended) The spark plug for an internal combustion according to ~~{C}~~claim 1, wherein a ~~{good}~~ thermal conduction core is disposed in an interior of said base of said ground electrode.

6. (Amended) The spark plug for an internal combustion according to ~~{C}~~claim 2, wherein a ~~{good}~~ thermal conduction core is disposed in an interior of said base of said ground electrode.

7. (Amended) The spark plug for an internal combustion according to ~~{C}~~claim 3, wherein a ~~{good}~~ thermal conduction core is disposed in an interior of said base of said ground electrode.

8. (Amended) The spark plug for an internal combustion according to ~~[C]~~claim 4,
wherein a ~~[good]~~ thermal conduction core is disposed in an interior of said base of said ground
electrode.